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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/826,437

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Eduardo L. Quioc

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EXAMINER

ROSENBERG, LAURA B

ART UNIT

PAPER NUMBER

3616

DATE MAILED: 05/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/826,437	Applicant(s) QUIOC ET AL.	
	Examiner Laura B. Rosenberg	Art Unit 3616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/26/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Specification

2. The disclosure is objected to because of the following informalities: "internally projecting ledge" and "filter" have both been assigned reference number "38" (page 5).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 14-22 and 27-29 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claim 14, line 11, and claim 27, line 8, it is unclear what is securing the propellant charge in the space. If the filter is accomplishing this, then the examiner

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recommends rephrasing to read, "a filter in said inflator body, said filter securing said propellant charge in said space".

Claim 18 recites the limitation "said booster cup" in line 2; claim 27 recites the limitation "said inflator body" in line 4. There is insufficient antecedent basis for these limitations in the claims.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-21 and 27-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Kirchoff et al. (3,972,545). Kirchoff et al. disclose an inflator (including #5) able to be used with an inflatable restraint system (for example, an airbag), comprising:

- Inflator body (including #6) having a first end (for example, left end in figure 1) and a second end (for example, right end in figure 1)
- Elongate, substantially cylindrical booster/combustion cup (including #34) extending in the body, oriented substantially coaxially with the inflator body, and having an outer peripheral wall (for example, outer cylindrical wall) and an end surface (for example, right end in figure 1) extending radially inwardly from the wall
- Plurality of apertures formed in the outer peripheral wall (apertures formed when peripheral wall of tube is ruptured by squib and pyrotechnic material)

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- First propellant charge (including #21) positioned in the booster/combustion cup
- Second propellant charge (including #18) positioned in the inflator body
- Initiator assembly (including squibs #19, 20) able to activate the first propellant charge, a combustion thereof initiating a combustion of the second propellant charge and ejection of an inflation gas from the inflator body (via discharge orifice #13)
- Inflator body comprises an inner peripheral wall separated from the outer peripheral wall by a substantially annular space, the second propellant charge being positioned in the space, substantially adjacent the outer peripheral wall (best seen in figure 1)
- Second propellant charge comprise a plurality of propellant tablets (including #18) and substantially fills the space between the outer peripheral wall and the inner peripheral wall of the inflator body (best seen in figure 1)
- Filter (including #22, 24, 28, 29, 30, 32) constraining the second propellant charge in the space (best seen in figure 1)
- Nozzle (including #12) positioned at the second end of the body and defining a nozzle outlet (including #13) able to supply an inflation gas to the inflatable restraint system
- Filter positioned adjacent the end surface (in particular, filter component #22)
- Body has a total length and an area defined by a cross-section, and the filter has a given length about one-half (though not necessarily drawn to scale, filter appears to be about one-half of the total length of the body, as seen in figure 1), the filter occupying a volume determined by multiplying the cross-section of the body by the length of the filter

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- Substantially annular space separating inner peripheral wall and outer peripheral wall extends longitudinally in the inflator body from a point proximate the first end up to a point substantially coplanar with the end surface of the booster/combustion cup (best seen in figure 1)
- Nozzle constrains the filter against axial displacement (for example, via contact of right end of filter with left end of nozzle including perforated annulus #33, as seen in figure 1)
- Tablets (including #18) positioned in a geometrically ordered fashion in the annular space (for example, as seen in figure 1)
- Tablets (including #18) stacked adjacently in the annular space and having cylindrical axes oriented substantially perpendicular the inner peripheral wall (for example, as seen in figure 1)
- Booster/combustion cup attached to initiator body (including plug at left end of squib #19 that is attached to end cap #7) and suspended therefrom, being supported in the inflator body solely by the attachment to the initiator body (best seen in figure 1)
- Filter is substantially cylindrical and includes a substantially cylindrical periphery positioned adjacent the inner peripheral wall (best seen in figure 1) and a substantially planar end (for example, left end of filter portion #22) positioned flush with the end surface (right end of booster/combustion cup)
- Nozzle is threadingly engaged with the inflator body (at screw threads #11)
- Filter length is sized to change the gas pressure resulting from activation of the gas generator (for example, column 4, lines 9-16)

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7. Claims 1-6 and 23-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Adams et al. (4,437,681). Adams et al. disclose an inflator (best seen in figure 1) able to be used with an inflatable restraint system (can be seen in figure 3), comprising:

- Inflator body (including #10)
- Elongate, substantially cylindrical booster cup (including #33) extending in the body, oriented substantially coaxially with the inflator body, and having an outer peripheral wall (for example, outer cylindrical wall) and an end surface (for example, left end in figure 1) extending radially inwardly from the wall
- Plurality of apertures (including #36) formed in the outer peripheral wall
- First propellant charge (including #35) positioned in the booster cup
- Second propellant charge (including #38) positioned in the inflator body
- Initiator assembly (including squib #34) able to activate the first propellant charge, a combustion thereof initiating a combustion of the second propellant charge and ejection of an inflation gas from the inflator body (via outlet ports #13, 14)
- Inflator body comprises an inner peripheral wall separated from the outer peripheral wall by a substantially annular space, the second propellant charge being positioned in the space, substantially adjacent the outer peripheral wall (best seen in figures 1, 2)
- Second propellant charge comprise a plurality of propellant tablets (including #38) and substantially fills the space between the outer peripheral wall and the inner peripheral wall of the inflator body (best seen in figures 1, 2)

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- Filter (including #24-27, 29) constraining the second propellant charge in the space (best seen in figure 1)
- Inflatable airbelt (for example, including cushion #39 of safety harness #40)

8. Claims 1-12, 14-16, 19-21, and 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Ruckdeschel et al. (6,196,583). Ruckdeschel et al. disclose an inflator (best seen in figure 1) able to be used with an inflatable restraint system (for example, an air-bag system), comprising:

- Inflator body (including #1) having a first end (for example, bottom end in figure 1) and a second end (for example, top end in figure 1)
- Elongate, substantially cylindrical booster/combustion cup (including #5) extending in the body, oriented substantially coaxially with the inflator body, and having an outer peripheral wall (for example, outer cylindrical wall) and an end surface (for example, top end in figure 1) extending radially inwardly from the wall
- Plurality of apertures (including #4) formed in the outer peripheral wall
- First propellant charge (including #3) positioned in the booster/combustion cup
- Second propellant charge (including #6) positioned in the inflator body
- Initiator assembly (including igniter #2) able to activate the first propellant charge, a combustion thereof initiating a combustion of the second propellant charge and ejection of an inflation gas from the inflator body (via bore holes #9)

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- Inflator body comprises an inner peripheral wall separated from the outer peripheral wall by a substantially annular space, the second propellant charge being positioned in the space, substantially adjacent the outer peripheral wall (best seen in figure 1)
- Second propellant charge comprise a plurality of propellant tablets (including #6) and substantially fills the space between the outer peripheral wall and the inner peripheral wall of the inflator body (best seen in figure 1)
- Filter (including #7) constraining the second propellant charge in the space (best seen in figure 1)
- Nozzle (including #10) positioned at the second end of the body and defining a nozzle outlet (for example, upper opening of nozzle) able to supply an inflation gas to the inflatable restraint system
- Filter positioned adjacent (in close proximity to) the end surface
- Body has a total length and an area defined by a cross-section, and the filter has a given length about one-fourth (though not necessarily drawn to scale, filter appears to be about one-fourth of the total length of the body, as seen in figure 1), the filter occupying a volume determined by multiplying the cross-section of the body by the length of the filter
- Substantially annular space separating inner peripheral wall and outer peripheral wall extends longitudinally in the inflator body from a point proximate the first end up to a point substantially coplanar with the end surface of the booster/combustion cup (best seen in figure 1)

- Nozzle constrains the filter against axial displacement (for example, via contact of upper end of filter with lower end of nozzle including plate #8, as seen in figure 1)
- Tablets (including #6) positioned in a geometrically ordered fashion in the annular space (for example, as seen in figure 1)
- Tablets (including #6) stacked adjacently in the annular space and having cylindrical axes oriented substantially perpendicular the inner peripheral wall (for example, as seen in figure 1)
- Booster/combustion cup attached to initiator body (including #2 and surrounding housing) and suspended therefrom, being supported in the inflator body solely by the attachment to the initiator body (best seen in figure 1)

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 14 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi (6,145,873) in view of Ruckdeschel et al. (6,196,583). Takeuchi discloses an inflatable restraint system (for example, an air belt system) able to be used with a motor vehicle, comprising:

- Inflatable restraint device (including air belt #56)

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- Inflator (including #26) able to provide an inflation gas to the inflatable restraint device and comprising an elongate substantially cylindrical inflator body (can be seen in figure 3) having a first end (for example, bottom end as seen in figure 3) and a second end (for example, top end as seen in figure 3) and an inner peripheral wall (not shown, but would be interior wall of inflator body)
- Inflatable restraint is an airbelt (including #56)

Takeuchi does not specifically disclose all of the interior features of the inflator, such as a combustion cup, apertures, propellant charge, filter, or nozzle member.

Ruckdeschel et al. teach an inflatable restraint system, as set forth above, including an elongate combustion cup, plurality of apertures, propellant charge, filter, and nozzle member. It would have been obvious to one skilled in the art at the time that the invention was made to modify the inflator of Takeuchi such that it comprised combustion cup, apertures, propellant charge, filter, and nozzle as claimed in view of the teachings of Ruckdeschel et al. so as to allow for the possibility of thinner wall thicknesses, the employment of other materials, lightweight structures and inflator designs which are more cost-effective and have a smaller geometry, so as to filter out slags and salt particles materializing from combustion, which leads to reduced particle emissions, and so as to produce cooler inflator exit gases, as well as other benefits (Ruckdeschel et al.: columns 3, 4).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Davis et al., Winterhalder et al., Cook et al., Nakashima et al., Longhurst et al., and Werner each disclose an inflator comprising an inflator body, booster cup with a propellant and apertures, second propellant in a space between booster cup and inflator body interior wall, and initiator assembly.

O'Loughlin et al., Suyama, Lewis, Schneider et al., Busgen et al., Braun et al., and Quioc et al. each disclose an inflator that can be used in an airbelt.


Bernau et al., Van Wynsberghe et al., Cabrera, Smith et al., Yamazaki et al., and Yoshida et al. each disclose an inflator with several features similar to applicant's claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura B. Rosenberg whose telephone number is (571) 272-6674. The examiner can normally be reached on Monday-Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on (571) 272-6669. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Laura B Rosenberg
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